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Abstract

We study international competition in high-end products for 416 detailed HS6 product categories marketed by leading French luxury brands. We construct a world database of trade flows for these products in the period 1994-2009, computing unit values of related bilateral trade flows and analyzing competition among the main exporters. We use the observed distribution of unit values to define a high-end market segment. In 2009, Europe's market share (EU27 plus Switzerland) despite suffering some erosion since 1994, represented three-quarters of the world market. Exports of high-end products are shown to be less sensitive to distance than other products, and found more sensitive to destination country wealth than other products, but only in relation to countries already producing a large range of luxury brands.

Keywords: product differentiation, market shares, unit values
JEL Codes: F12, F15

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1 Introduction

The upgrading of emerging countries' capabilities combined with rapid GDP and export growth have led to a profound redistribution of world market shares of manufactured goods since the mid 1900s. China stands out: its market share increased to 18.5% in 2010, three times its share in 1995 (6.3%).[1]. Until the crisis, European commercial performance was proving more resilient (resp. 17.7% in 2010 and 20.7% 1995 – but 18.9% in 2007) than US or Japanese performance. Using an econometric shift-share methodology, Cheptea et al. (2014) shows buoyancy of EU market shares in the higher market price ranges, although to a lesser extent for high-technology products, with European producers benefitting from cumulative preferences for certain products, incremental innovation, and market power. On the demand side, a large share of high-priced goods in EU consumption and exports is in line with demand-side explanations for how product quality drives trade patterns (Hallak, 2006; Schott, 2004; Fontagne et al., 2008). The related production function is generally skill or R&D intensive, which leaves space for a supply-side explanation of this statistical regularity (Goldberg and Pavcnik, 2007; Verhoogen, 2008; Fontagne et al., 2008). In addition, recent European integration has led to large differences within the Single European Market in labor costs, skills, and ultimately, comparative advantages. EU based firms have been able to exploit advantages in high-priced goods combined with more affordable labor costs in newly acceded countries. The fragmentation of production processes along the value chain has favored this; a well-known German top-end SUV is generally considered the flagship example of this beneficial combination of competitive elements (Sinn, 2006) in an economy with high labor costs.

At the forefront of this market positioning of European industry, there is a very specific tier of the upper price range in the market that is worth analyzing. Many traditional, high-end handicrafts industries have managed to sustain European brands and know-how in sectors nearly decimated by competition from low labor cost economies. On the supply side, these activities are design, advertising, and cumulative innovation intensive, and respond to a cultural dimension of consumption. On the demand side, these products are generally luxury goods which are sold to a tiny fraction of consumers (Ray and Vatan, 2013). We focus on these high-end varieties in what follows. Martin and Mayneris (2013) analyze the case of French exporters, using cus-

[1] We exclude oil and intra-EU trade.

toms data for individual firms. They identify high-end exporters by combining information on luxury brands, provided by a trade association of high-end good producers, with prices charged by their French competitors (they observe unit values). The high-end exporters so-defined are not more geographically diversified, but they export to more distant markets. This points to a lower sensitivity to distance of high-end variety export(er)s. Martin and Mayneris (2013) find also that high-end export(er)s are more sensitive to the average income in the destination country.

The success of emerging countries in the world market, which is leading to increased income per capita as well as internal income disparities, has inflated demand for high-end varieties of goods. The combination of a well established brand, specific skills, and dedicated networks of wholesalers has given a first-mover advantage to European producers. On the other hand, these industries rely on – generally skilled – labor intensive activities. This production function allows room for maneuver to producers or sub-contractors in developing economies. Overall, we expect opposing forces related to differentiated labor intensive products (differentiation versus labor cost) to be exacerbated in this market segment. This paper examines the recent performance of these (tiny) segments of the industry, the main players, and the determinants of exports of high-end varieties.

An obvious difficulty related to assessing world competition in this market segment is inadequate classification of traded products. Despite a reasonable knowledge of the firms selling high-end products, there is no official list of these products. We propose a tentative list at the finest level of detail (6-digit Harmonized System - HS6) for the products of interest. We reconstruct the high-end segment of international trade for the product categories exported by a representative group of those firms presenting themselves as "[a club] of 78 French luxury houses and 14 cultural institutions [working] together to promote French art de vivre at international level".[2] Based on this sub-sample of products, we focus on the flows corresponding to the upper tier of the distribution of market prices. Since we do not observe prices, we have to rely on the unit values of traded products. Thus, our approach is based on products and unit values, not firms. The aim is to observe the world matrix of bilateral trade flows for these products,

[2]The objective of the *Comité* is "to collectively promote [member's] shared values in France and internationally". See website of the Comité:$http : //www.comitecolbert.com/$. The selection of products was made independently.

which constrains our choice,[3] and means that initially we need to consider all firms in a given country, exporting in a given product category to a given market, within each year period, as an aggregate. Using information on unit values for the corresponding trade flows, we then can classify traded varieties into two mutually exclusive categories, high-end or not.

It is important to note that the unit value is not the price: higher unit values for certain exporting countries or in certain destination markets may simply be the result of product composition effects within product categories at the HS6 level, rather than higher prices for a given quality. Conversely, unit values may not capture the fact that high-end products cross borders at a unit value not too different from the mean, and then very high mark-ups are applied to these products by the wholesale and retail sectors. These are important issues, even if their impact is minimized by considering the extreme upper segment of the distribution of unit values of the traded products. This then, can introduce a second difficulty since extreme (high or low) unit values may be flawed by declaration errors. In order to try to reduce some of the noise in the data, we clean our database of outliers at the exporter and product levels. Having constructed our database, we compute the market shares of the various exporters, at the sectoral level for the so called "high-end tier" of the market. Finally, note that we do not observe individual exporter's prices or unit values but rather the average Free on Board (FOB) unit value of all the flows from an exporting country to a destination country, cumulated over 12 months, reported under a specific HS6 position.

With these methodological limitations in mind, we systematically explore international trade in selected products and price ranges in bilateral exchanges. First, we observe that Europe is still the main player in this arena, with half of world exports of high-end varieties. However, there has been a profound reshaping of world market share due to a sharp increase in Chinese exports. These are mainly in the textile sector, where product differentiation has been very weak protection for producers in rich countries. If we exclude this sector, we observe European market share resilience in a buoyant world market, which translates into a sharp increase in the value of exports.

Second, we explore what determines export performance in the high-end market segment using our aggregated data (annual exports of each selected HS6 product exported in the high-

[3]Martin and Mayneris (2013) and Ray and Vatan (2013) use individual firm data and consequently consider only French exports.

end segment of the market by a country to a particular market) for 176 countries. We rely on a standard gravity framework to assess the determinants of trade flows. We are interested in whether these determinants differ from the usual ones. We find that exporters of high-end products suffer less from distance than exporters of other goods. This confirms Martin and Mayneris (2013) result regarding distance, that the negative effect of distance on the exports of French firms dramatically decreases in the case of Comité Colbert firms compared to other firms. However, not all the results obtained using individual customs data for French firms hold if – as here – aggregated data are used to construct the world trade in high-end varieties matrix. There are aspects that are specific to certain exporters, such as France, which will emerge from our analysis. Martin and Mayneris (2013) highlight that the positive effect of destination country wealth (GDP per capita) on exports is significantly larger for French firms exporting high-end products, compared to other French exporters. When we consider cross-country evidence for the whole set of exporters we find that the average effect of the importing country's wealth is lower for high-end goods relative to other products. By resolving this apparent contradiction related to micro and aggregate data, we show that only some exporting countries (including France - and thus the Colbert firms analysed in Martin and Mayneris (2013), Italy, and Switzerland) benefit more from importers' wealth in the case of exports of high-end goods than from exports of other products. Finally, we find that the effect of a destination country's wealth is positively and significantly driven by the number of luxury brands in the exporting country. [4] This means that only some exporting countries, home to some very well known luxury brands, export more high-end than other goods to rich destinations. We conclude that a highly selective club of exporting countries that are capitalizing on their historical reputation for production and export of luxury goods, reap relatively more benefits from increasing wealth in the importing country when exporting high-end products.

The rest of the paper is organized as follows. The related literature is reviewed briefly in Section 2. Section 3 presents the data, the assumptions made when constructing the bilateral trade in high-end products matrix, and descriptive statistics for the redistribution of world market shares. Section 4 describes our econometric estimation strategy, and summarizes the results. Section 5 concludes.

[4] We calculate the number of brands classified in the top100 most valuable luxury brands ranking by the *World Luxury Association*, by exporting country. Data available at: http://www.top100luxury.com.

2 Literature review

Recent advances in trade theory and empirics have led to a profound reshaping of our understanding of the patterns of international trade.

Traded goods are differentiated horizontally (in terms of variety) and vertically (in terms of quality). Economies of scale and the necessity to amortize the development costs for each new variety impose a limit on the economic affordability of product diversity. The capacity to offer more varieties is determined by the size of the industry output, which is determined by country size and comparative advantage (Krugman, 1980). Hummels and Klenow (2005) find that large countries export higher quality goods and not just a bigger varieties of these goods. The larger or more sophisticated and wealthier the domestic market, the higher the quality of the products supplied to the local consumer (Motta et al., 1997). As a result of this orientation of domestic demand, and the skill content of production, the capacity to offer high-end goods is positively related to exporting country's income per capita (Falvey and Kierzkowski, 1987; Flam and Helpman, 1987; Hallak, 2010). In general, high income countries, conditional on sector characteristics, engage in more intensive bilateral trade, which is in line with Linder's seminal hypothesis (Linder, 1961).

Another departure from the traditional theory is represented by consumer preferences. For simplicity, theories that address mainly the supply side determinants of trade, usually assume homothetic and homogenous consumer preferences. This assumption contrasts with frequent evidence provided by gravity equations, that similarities in income per capita are a driver of bilateral trade when controlling for economic size. Introducing non-homothetic preferences in trade theory addresses several puzzles (Markusen, 2013): increasing income inequalities, missing trade, home bias in consumption habits, higher prices in high income countries, and dependence of the values of bilateral trade on income per capita controlling for economic size. Simonovska (2010) shows that variable mark-ups account for 80% of the positive price-income relationship observed for 123 countries. This has important consequences for our understanding of the underlying forces of international specialization. Reimer and Hertel (2010) show a strong correlation between the factor content of consumption and per capita income in the presence of non-homothetic preferences, and that accounting for this helps to resolve the puzzle related to missing trade. Fieler (2011) shows that bilateral trade relationships for 162 countries can be

better predicted if the usual assumption of homotheticity is relaxed – in particular for countries of different sizes and income levels. Crozet et al. (2012) give a quality interpretation of the Melitz model of firm heterogeneity. They use firm-level export data with expert assessments for the Champagne producers' quality, to estimate the key parameters of the model. Though demand for Champagne increases with income per capita, higher quality increases exports within all income categories.

In this context, there is room for exporters to ship similar goods at very different price and cost level, on a continuous basis. The increasing similarity in the categories of products exported by countries at different levels of economic development, at very different prices, has received increased attention in the empirical literature following the seminal study by Schott (2004). Fontagne et al. (2008) consider all products, exporters and importers (a panel of 163 countries over 10 years) and define three market segments. They explain the value of bilateral exports in each market segment. They show that low price goods are more sensitive to distance than high price ones and that richer countries tend to export more goods in the upper segment of the market. However, their definition of the "upper segment" of the market is very broad and covers one third of the value of the world market for each product. A more specific study of the exclusive products at the very top of the vertical differentiation ladder requires a different approach.

Martin and Mayneris (2013) rely on French customs data to consider those firms (actually the statistical units defined by their administrative identifier) that define themselves specifically as exporters of luxury goods (recorded as members of the Comité Colbert referred to above). Not all French exporters of luxury goods belong to this trade association, and Martin and Mayneris (2013) also consider non-members exporting from France within the same product categories at similar (high) prices. They compare these exporters of high-end products to low-end variety exporters. High-end variety exporters do not export to more countries, but do trade with more distant markets because of the lower sensitivity to distance of high-end variety exports. High-end variety exporters are also more prone to shift toward fast-growing economies, and accordingly to reap the benefits of the redistribution of world growth towards emerging economies. Martin and Mayneris (2013) finally show that high-end French exporters are more sensitive to average income in the destination country. The final picture is one of high-price niche good producers that export a small number of products to a small number of

countries but, on average, manage to reach more distant and more promising markets. Ray and Vatan (2013) address a different issue: rather than studying the impact of average wealth of the destination market on exports of high-end products, they study the impact of income distribution, based on the assumption of social interactions shaping individual preferences. Using the same French data on exporters of high-end products, they show that the mean unit value of exports in a given product category, increases with the Gini index of income dispersion in the destination country. Countries with more dispersed income show a higher willingness to pay for the attributes provided by high-end products.

Our paper adds to this literature by considering the whole range of exporting countries and markets (as opposed e.g. to Martin and Mayneris (2013) and Ray and Vatan (2013)) and applying the finest definition of high-end products (as opposed e.g. to Fontagne et al. (2008)). It also explores the heterogeneity within exporting countries based on their endowment of well-established luxury brands. Notably, we distinguish between countries with a long history of high-end producers, and others. This builds on the literature on the heterogeneity in luxury brands' performance.

Standard management theories related to luxury brands, such as Doyle (2002), point out that luxury firms produce goods that are at the top of the quality distribution, and that their marketing is mostly image-driven (compared to other goods). However, anecdotal evidence shows, as for example the recent case of Jaguar, that for luxury firms profitability can be elusive despite huge expenditure on marketing activities. Atwal and Williams (2009) highlight that the management of the luxury brand is a major determinant of the probability of long-term success for these firms, which Kapferer and Bastien (2009) argue is due to strong specificities in their management. Luxury brands have to convey positive values beyond the intrinsic quality of the good, and provide goods that are socially important from the consumers' point of view (Han et al., 2010). Among other characteristics, Kapferer and Bastien (2009) stress that luxury goods firms have to convince consumers that their products are scarce and unique, which makes their brands exclusive. This is not just a matter of image: reputation is more easily achieved by brands that have a long history Dubois et al. (2005). The French luxury goods houses that belong to the Comité Colbert are good examples of brands – and thus firms – capitalizing on an ancestral heritage.

3 Data, assumptions and descriptive statistics

Data and assumptions

We use BACI data for the period 1994-2009.[5] BACI is a world trade dataset developed by the CEPII. It draws on UN COMTRADE data and provides consistent data on bilateral trade. For each bilateral flow classified by HS6, BACI reports a unique FOB value, quantity, and unit value which takes account of the declarations of both exporters and importers. This reconciliation is based primarily on Cost Insurance Freight (CIF) values reported by importers, treated to enable comparison with exporters' FOB values which allows estimation of the reliability of each country reporting. (Gaulier and Zignago, 2010). BACI is an exhaustive database and covers trade for more than 200 countries and 5,000 products. Trade flows are considered as FOB, allowing comparisons clear of transport costs. Also, data are reconciled, correcting for erroneous declarations by one of the two trading countries.

In 2005, the treatment of unit values by the UN changed, and our understanding, based on a detailed examination of the series used for our exercise, is that the reliability of this information has declined somewhat. This reinforces the need to clean the data of outliers, which is a source of trade-off since we are interested in the upper tier of the distribution. We experimented with various combinations of thresholds and concluded that the solution presented below is fairly well balanced. With the exception of Hong-Kong and Singapore which re-export a significant part of their imports, the sample of exporters and destination countries are from BACI, which suggests that this study is quite exhaustive.

We select 416 HS6 product groups in BACI flagged as European high-end products. This selection is based on the activities of the 75 manufacturing sector members of the French association of luxury brands.[6] We use the SITC-rev3 (2-digit and 4-digit) classification to group the HS6 codes into large industries. Appendix Table ST1 shows that our sample is split into 13 product groups in the SITC-rev3 2-digit classification; we use the 4-digit classification of products for the rest of the sample (10 product groups with the SITC-rev3 4-digit aggregation level). This construction of the 23 product groups of the SITC-rev3 classification fits better

[5] See http://www.cepii.fr/anglaisgraph/bdd/baci.html.

[6] Since France is an important player in the sector, we retained the HS6 codes of the items produced by the *Maisons* of the *Comité Colbert* in order to select relevant HS6 products. The usual disclaimer applies since *Comite Colbert* was not involved in this selection.

with the luxury goods "sectors". Finally, we aggregate these 23 SITC-rev3 product groups into 8 sectors: tableware, decoration, clothing, beverages, fragrances, jewellery, bags and shoes, and confectionery. We exclude the upper and lower extreme unit values, computing the difference between the unit value of each flow and the mean of the unit value of each product group, exported over the whole period considered.

We use the distribution of these differences retaining only the observations between the 5th and the 95th percentiles (90% of the observations) in the BACI database, for 1994-2009. Thus, we work with around 87.9% of the database in value, and 95.5% in quantity. This method can be compared with Hallak (2006), who defines two thresholds: the mean of the unit value (by product group, exporter, and year) multiplied by 5 and divided by 5. This method leads to a smaller sample (25.7% of the observations are deleted). But one of the differences is that unit values that are excluded are mainly in the low-end of the distribution (91.8% of the deleted observations). We drop the same share of extreme values from the lowest and the highest unit values (Appendix Table ST1).

Because the product groups we are interested in cover trade flows at very different prices (and quality), we focus on the high-end of the unit value distribution. We define high-end product groups as observations in the upper decile of the distribution of unit values for each product and year. The top 10% of the unit values represent 4.6% of our trade sample (excluding one decile of the observations), and 4.1% of total trade in value for these HS6 positions (as recorded in BACI). This corresponds to only 0.4% of the quantities because the top end of the distribution of unit values is characterized by small quantity flows of high value.

The "entry price" in the upper segment is the same for all exporters and all destination markets for a given HS6-year pair. Figure 1 depicts how the entry price evolves for two categories of items: perfumes and lipsticks, over the period considered. Indeed, not all exporters "enter", and entry will not correspond to the same unit value of the flow considered, since each exporter will pass the threshold plotted in Figure 1 at a different unit value. Since the entry price is the same for all exporters, we would expect large swings in exchange rates to affect the market shares of countries as long as this shock is passed on to prices in foreign currency.

World demand for this segment of the market is rather pro-cyclical (Figure 2). The mean growth rate of world imports was 5.6% over 1994-2009. The 2009 trade crisis is observable for this segment (-23.4%). If we exclude 2009, we observe a 7.3% growth rate. In 2000, 2002,

and 2004, the growth rate was above 20%. Chinese exports have grown much faster than world imports (13.2% over 1994-2008), but since their initial value was low, this did not dramatically affect the relative positions of the main exporters, including the EU27 (resp. 6.2%). Overall, in dollars, world imports tripled in the period 1994-2008, as shown in Figure 3.

The product composition of this market shown in Figure 4 is characterized by the large share of textile items, and volatility of the value of wine imports (Champagne). This suggests we should compare the whole sample restricted to the *non-textile* sectors when considering changes in the relative positions of exporters.[7]

3.1 Descriptive statistics

Table 1 shows the world market shares of the main exporters (countries) of high-end products in 2009, as well as changes in the periods already examined. EU27 exporters controlled two-thirds of the world market in 2009, the next largest exporters being Switzerland – 7.7% of world exports, and China – 4.7%. Individually, Italy, Germany, and France have market shares above that of China. The long term shift of production to China is observable, though the main short term shock is attributable to exchange rate variations in the late 1990s. Overall, the EU lost 5.2% or 3.7 p.p. of its market share, while the Chinese market share has increased by more than 150%. Japan and the US lost respectively 15.0% and 19.4% of their market share over the period. Overall, these results point to the resilience of European manufacturers to competition from low wage countries for the considered market segment of labor intensive industries.

Figure 5 depicts individual exporting countries' performance over the 1994-2009 period. We observe two main periods, with a turning point in the early 2000s when the Chinese market share boomed, after which the evolution is smoother. In the last year of the first sub-period, China managed to gain 11 p.p. of world market of high-end products, and this is reflected in the opposite evolution of European market shares, with a high toll on Germany. This sharp shift in world market shares can be attributed essentially to the euro depreciation following its introduction. Although not fully passed into dollar prices, this depreciation led to a reduction in unit values for euro area based exporters, which pushed them partly out of the last decile of the distribution considered here (1 euro was worth 0.8252 US dollars on 10.26.2000). The changes

[7] In estimations including HS6 fixed effects, such as those presented in Section 5, the specificities of the textile sector are taken into account.

in market shares were more limited in the 2000s.

Figure 6 excludes the textile sector, with the result that the two main players at world level are Italy and France (notwithstanding the resilient Italian market share of textile products). Other main EU exporting countries include Germany, the United Kingdom, Belgium, and Spain. Here again, we observe the huge swing in market shares after the introduction of the euro. This temporary adjustment aside, Italian and French market shares, excluding textiles, have been on the rise over the long term: around 20% in 1994, against around 25% in 2008 (excluding year 2009 since this crisis year does not provide information on long term shifts in market shares).

Next, we turn to the sectoral market shares. In the Appendix tables, for each group of high-end products, according to the classification described above, we present the p.p. change in market shares for the top five exporters in 2009, for two sub-periods, and for the whole period. The last column in each table gives the percentage market share in 2009. Table ST2 shows the results for confectionery. Switzerland and Belgium are well known big players in confectionery and this applies also to high-end products. Belgium is the leading individual exporting country in the world for these products, with a 11.8% market share in 2009. Switzerland is the second biggest player, with 11.2%. The most significant redistribution of world market shares over the period considered is between Italy and Belgium, to the benefit of the latter. In the decoration sector, the most striking performance is displayed by Italy with one-third of the world market gained over the period considered here (Table ST3). The United Kingdom also performed well in contrast to France, Germany and Switzerland. In Table ST4, we observe again excellent performance of Italy for jewellery and watches. Switzerland also managed to increase its market share over the considered period, characterized by a renaissance in Swiss brands and a decline in Japanese brands in the high-end watch market. Fragrance exports are dominated by France with more than 28% of the world market in 2009 (Table ST5). The next biggest exporter is Japan. In this sector, changes in market shares are limited, with gains for Japan, Ireland, and Germany, and losses for Switzerland and France. Italian exporters of high-end shoes and bags have managed to corner half of the world market (Table ST6). In this sector, the shift has been detrimental primarily to French exporters. In the textile sector, China still has only a limited market share of high-end products (Table ST7). Italian exporters are again the major actors, and their progress has compensated for the deceptive German performance. The increase in Chinese exports of high-end tableware products is impressive as shown in Table ST8. Chinese producers

managed to dominate just short of one-third of the world market in the period. Japanese exports show resilience, while German and Swiss exports declined, and the Czech republic entered the top five ranking of world exports. The last sector is wine, essentially Champagne. France's supremacy is uncontested in this sector, with a 85% world market share in 2009 (Table ST9).

4 Determinants of high end export flows

Empirical Strategy

We analyze the effect of standard gravity determinants on bilateral trade flows of high end products. We focus first on the effect of distance and estimate the following equation:

$$T_{ijkt} = \alpha_0 + \alpha_1 HighEnd_{ijkt} + \alpha_2 Dist_{ij} + \alpha_3 Dist_{ij} \times HighEnd_{ijkt} + \delta_{it} + \mu_{jt} + \tau_k + \epsilon_{ijkt} \quad (1)$$

where T_{ijkt} is the logarithm of the bilateral trade flow between origin country i and destination country j of the HS6 product k in year t. We include $HighEnd_{ijkt}$, a dummy variable that is equal to 1 if T_{ijkt} is classified as a high-end trade flow[8] and 0 otherwise. We control also for the effect of the logarithm of the distance by introducing $Dist_{ij}$. Then, we include $Dist_{ij} \times HighEnd_{ijkt}$, an interaction term between the logarithm of the distance and the classification of the trade flow as a high-end variety. We capture the effect of the distance on trade flows in high-end varieties with $\alpha_2 + \alpha_3$. This specification also includes fixed effects at the country of origin and year levels, at the country of destination and year levels, and at the HS6 product level which controls for omitted variables and for multilateral resistance terms.

We also estimate the effect of the size (GDP) and the wealth (GDP per capita) of the exporting country on its exports of high-end products. We use the following specification:

[8] T_{ijkt} is defined as a high-end trade flow if u_{ijkt}, its unit value, is above the "entry price" $\tilde{u}_{kt}$. $\tilde{u}_{kt}$ is defined as the 9th decile of the unit value distribution, by HS product k and year t. The definition of high-end trade flows is described and discussed in Section 3.

$$T_{ijkt} = \beta_0 + \beta_1 HighEnd_{ijkt} + \beta_2 Dist_{ij} + \beta_3 GDP_{it} + \beta_4 GDPCAP_{it} + \beta_5 Dist_{ij} \times HighEnd_{ijkt} + \beta_6 GDP_{it} \times HighEnd_{ijkt} + \beta_7 GDPCAP_{it} \times HighEnd_{ijkt} + \lambda_j + \eta_{jkt} + \upsilon_{ijkt} \quad (2)$$

where GDP_{it} ($GDPCAP_{it}$) is the logarithm of the GDP (GDP per capita) of the exporting country i in the year t. We also introduce the interaction between the logarithm of the GDP (GDP per capita) of the country i in the year t and $HighEnd_{ijkt}$ to estimate the marginal effect of the size (wealth) of the exporting country on its bilateral trade flows in high-end products. We control for omitted variables and multilateral resistance terms including fixed effects at the country i level and the country i, product k and year t level.

We then replicate this exercise focusing on destination country determinants, estimating:

$$T_{ijkt} = \gamma_0 + \gamma_1 HighEnd_{ijkt} + \gamma_2 Dist_{ij} + \gamma_3 GDP_{jt} + \gamma_4 GDPCAP_{jt} + \gamma_5 Dist_{ij} \times HighEnd_{ijkt} + \gamma_6 GDP_{jt} \times HighEnd_{ijkt} + \gamma_7 GDPCAP_{jt} \times HighEnd_{ijkt} + \chi_i + \varphi_{ikt} + \omega_{ijkt} \quad (3)$$

where GDP_{jt} ($GDPCAP_{jt}$) is the logarithm of the GDP (GDP per Capita) of the importing country j in the year t, and $GDP_{jt} \times HighEnd_{ijkt}$ ($GDPCAP_{jt} \times HighEnd_{ijkt}$) is the interaction term between the logarithm of the GDP (GDP per capita) of the country j at the year t and the classification of T_{ijkt} as a high-end good or not, $HighEnd_{ijkt}$. We also include fixed effects at the country i level and the country i, product k and year t levels. All estimates are clustered at the exporting country level.

In equation (2) , $\beta_3 + \beta_6$ captures the effect of the size (resp. ($\beta_4 + \beta_7$) for the effect of wealth) of exporters on high-end trade bilateral flows. Similarly, in equation (3), $\gamma_3 + \gamma_6$ captures the effect of the size (resp. ($\gamma_4 + \gamma_7$) for the effect of wealth) of importers on high-end trade bilateral flows. Martin and Mayneris (2013) find a null effect of distance and a positive effect of the exporter's GDP per capita on the high-end export flows of French firms. They show also that the positive effect of $GDPCAP_{jt}$ is significantly larger in the case of high-end varieties. These results suggest that exports of high-end varieties are less sensitive to distance and respond positively more to the wealth of destination countries.

Results

Results of the OLS estimation of equation (1) are shown in Table 2 column 1. We find that distance has a negative impact on trade flows of non-high-end varieties, but less so for trade flows of high-end varieties. This result supports the findings of Martin and Mayneris (2013). We then introduce exporting country determinants of trade flows in column 2, estimating equation (2). The effect of distance on both high-end and other products is similar to the results in column 1, and the size (GDP) of the exporting country is found to have a positive and significant effect, in the case of both high-end and other varieties. This result is very standard in the trade literature. More interestingly, we study the effect of being a rich country on its export flows of high-end goods. Our estimation confirms a negative and significant effect of the wealth (GDP per capita) of the exporting country on its export flows of goods in general. This reflects the shift in comparative advantage of these countries to services. In contrast, for high-end exports, exporter's wealth is found to almost compensate for this effect: the disadvantage of high income countries almost disappears for high-end goods. Figure 7 suggests that countries with higher GDP per capita are also larger exporters of high-end varieties. However, as we explained, this is not what we observed, which might be because GDP per capita is correlated with variables that positively influence high end flows, such as GDP.

Table 2 column 3 replicates this exercise, but introduces destination country specific explanatory variables in place of exporter specific ones. We then estimate equation (3), using an OLS estimator. The effect of distance on both types of trade flows is still robust. We observe that trade flows of non-high-end products are positively driven toward large and rich countries: the effects of GDP_i and $GDPCAP_i$ are positive and significant. The effect of exporting country size is the same in the case of high-end flows. However, we find that trade flows of high-end products are less sensitive to the destination country wealth. The total effect of the importer's GDP per capita on high-end trade flows is still positive, but significantly lower than in the case of other products. This result contrasts with Martin and Mayneris (2013) findings for France only, and may be driven by the difference in the sample of exporters (recall that we consider all exporting countries shipping high-end products).

To investigate these apparently contradictory results further, we estimate equation (3) for each exporting country. We include HS products and year fixed effects in place of controls

in column 3. Column 4 presents the results for France: all results are qualitatively similar except for the effect of $GDPCAP_j \times HighEnd$. Indeed, in the special case of France, our findings are similar to those of Martin and Mayneris (2013) using French customs data: exports from France are more sensitive to the of destination country wealth considering high-end products compared to other goods. We present the results for three other large exporters of high-end goods: Italy (column 5), Switzerland (column 6) and China (column 7). The effect of $GDPCAP_j \times HighEnd$ is positive and significant in the case of Italy and Switzerland. However, it is negative and significant for China. In other words, China exports more to rich countries, but exports a lower proportion of high-end products.

Finally, we investigate the potential origin country specific determinants that might explain the different results for $GDPCAP_j \times HighEnd$. Anecdotal evidence provided by our four largest exporters suggest that high-end industries in the leading European countries on the one hand, and in China on the other hand, perform differently. We first characterize high-end industries in our set of exporting countries by the number of leading luxury brands associated with them. The "top100 luxury brands" ranking of the World Luxury Association (WLA) provides a convenient approximation for our analysis. We count the number of brands that appear in this ranking by nationality. Figure 8 shows the heterogeneity in the number of top national luxury brands across exporting countries. Large exporters of high-end products on average are associated with at least one luxury brand in the top100 ranking of the WLA. However, even among leading exporters of luxury goods, the number of brands they control differs widely (from 1 in China and Japan, to 24 in France). Table 3 column 1 shows that the wealth of destination countries increases export flows more from countries with a higher number of top luxury brands. This means that being associated with a higher number of leading luxury brands increases the γ_7 observed for a given exporting country. We also measure the size of exporters of high-end products by calculating the total value of high-end trade flows by country over the period. Larger exporters of high-end products are not found to be characterized by a larger γ_7 (column 2). This conclusion holds also if we test for the effect of the wealth (GDP per capita) of these exporting countries (column 3). These results are robust to the introduction of these three explanatory variables in the same regression (column 4). They also hold when we use a binary dependent variable that is equal to 1 if γ_7 is positive and 0 otherwise (column 5). The results are very similar also if we restrict our sample to the 67 γ_7 that are significant at the 5%

level and use a dummy variable that is equal to 1 if γ_7 is significantly positive (at the 5% level) and zero otherwise (column 6). We find qualitatively the same effect using a non-linear (probit or a logit) estimator.

These findings support the idea that exports of high-end products increase with the wealth of the destination country. However, only a few exporting countries benefit more from wealthier destination countries in the case of high-end products compared to other goods. These countries are characterized by their association with leading luxury brands, and are mainly European countries.

5 Conclusion

The upgrading of emerging countries' capabilities combined with rapid export and GDP growth has led to a profound redistribution of world market shares of manufactured goods since the mid 1900s. Against this background, European commercial performance (unlike that of the US and Japan) was resilient until the crisis. This resilience was particularly noticeable in the upper price range of the market. Many traditional sectors, requiring excellent skills, have managed to keep alive European brands and know-how in industries that have been wiped out by competition from cheap and abundant labor economies. We proposed a list at the HS 6-digit level of the products of interest and reconstructed this high-end segment of international trade using information on the distribution of unit values of bilateral flows. Overall, we observe that a combination of product differentiation, branding and specific skills explain the resilience of EU producers in high-end products. Although Europe is still the main player in this arena, there has been a shift in world market shares, and a sharp increase in Chinese textile exports. The determinants of export performance in the high-end segment of the market are different from those in other segments, as shown by a standard gravity framework. Overall, exporters of high-end products suffer less from distance than exporters of other goods. Also, the positive effect of the destination country wealth on exports is significantly larger for high-end products generally. However this result is driven by exporting countries benefitting from a large number of luxury brands and capitalizing on their historical reputation in the production of luxury goods. Finally, over the period studied, an exclusive club of exporting countries reaps relatively more benefits from the increasing wealth in emerging importing countries, when exporting high-end

products.

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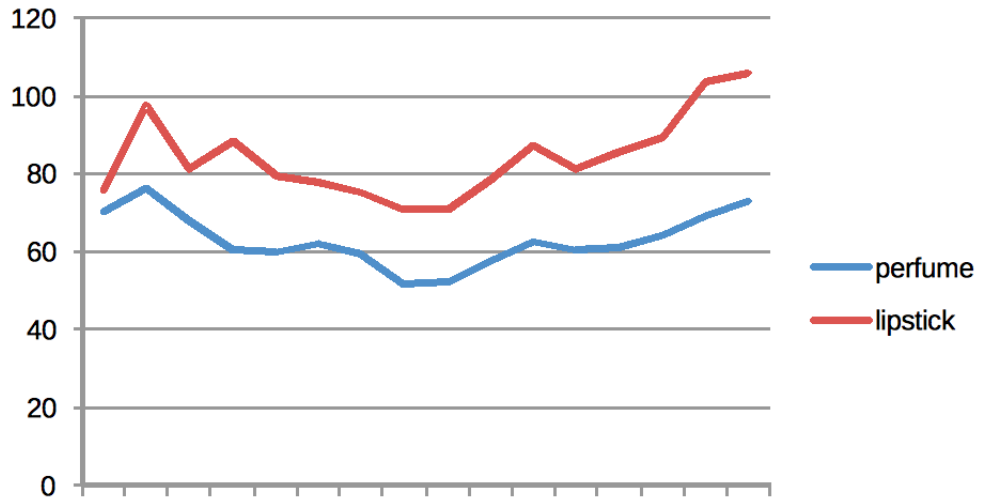
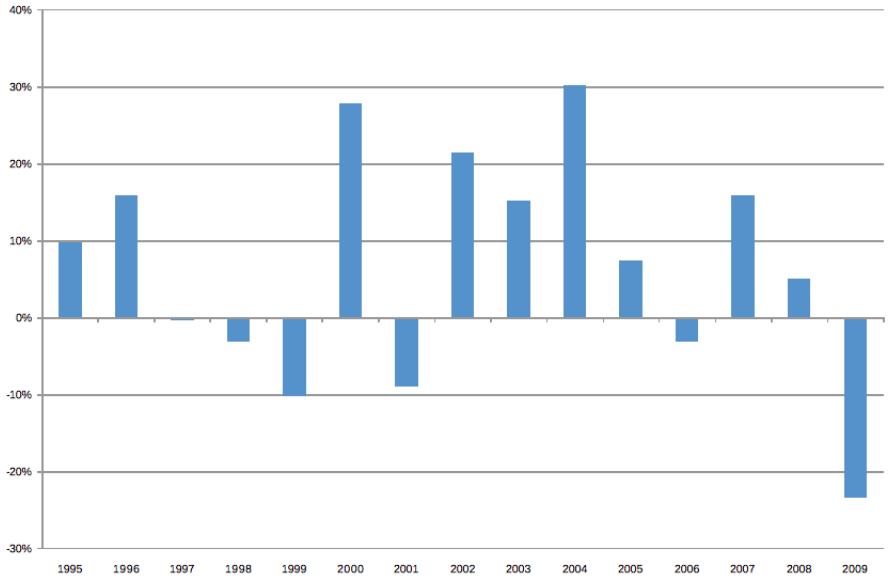
Graphs and Tables

Figure 1: Entry price in the high-end segment for two HS6 positions (1994-2009)



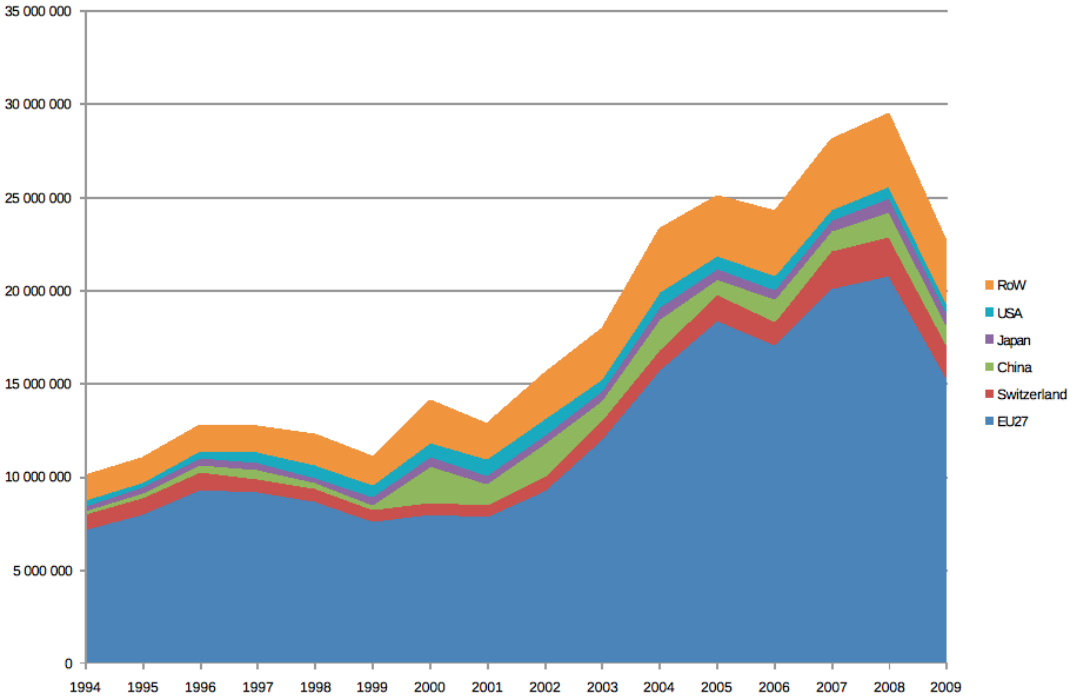
Source: BACI, authors calculation.

Figure 2: Annual growth rate of the world market (current value) for high-end products (percent)



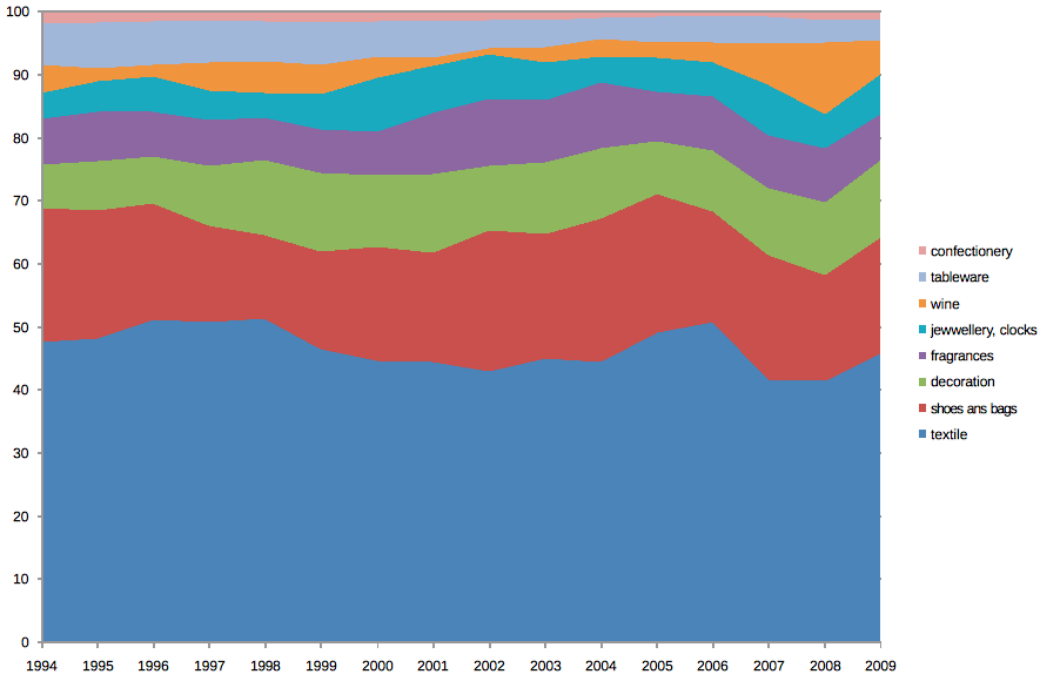
Source: BACI, authors calculation.

Figure 3: Market for high-end products, 1994-2009 (thousand dollars)



Source: BACI, authors calculation.

Figure 4: Structure of market for high-end products, by product category, 1994-2009 (thousand dollars)



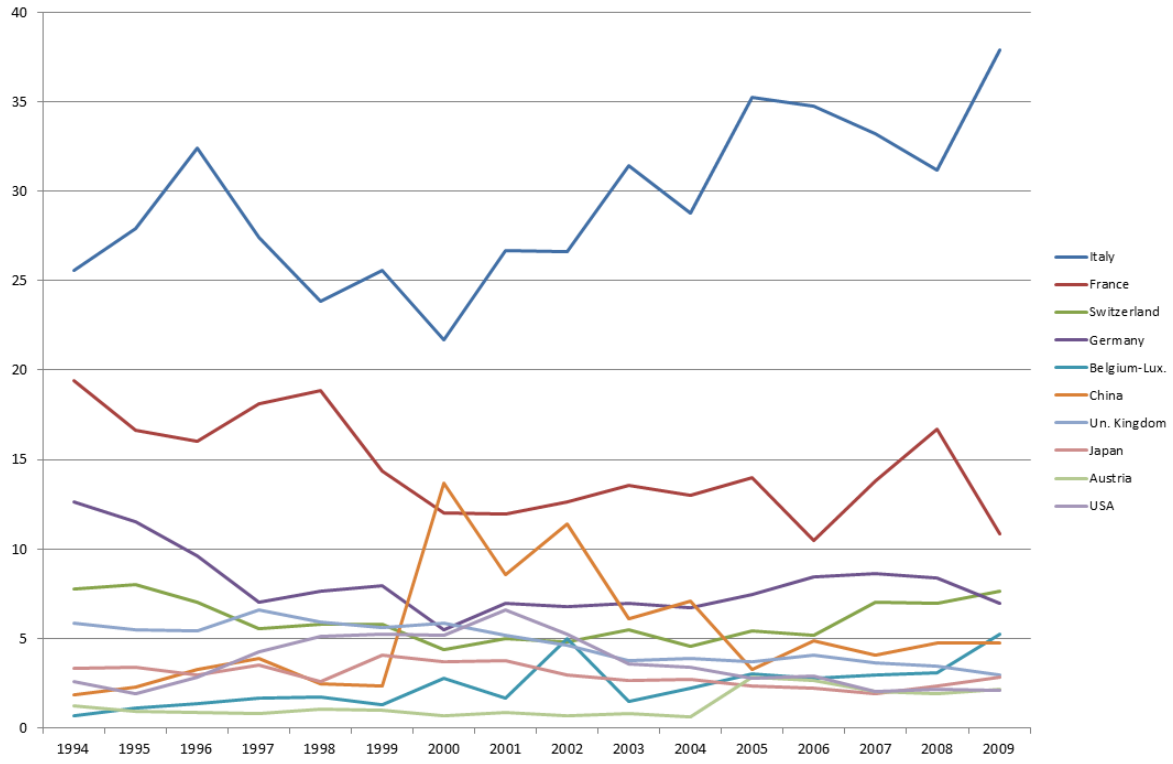
Source: BACI, authors calculation.

Table 1: Change in world market share of main exporters of high-end products

	p.p. change			percentage
	1994-200	2000-2009	1994-2009	2009
EU27	-14.9	11.2	-3.7	67.9
Switzerland	-3.3	3.3	-0.1	7.7
China	11.8	-9	2.9	4.7
Japan	0.4	-0.9	-0.5	2.9
USA	2.6	-3.1	-0.5	2.1

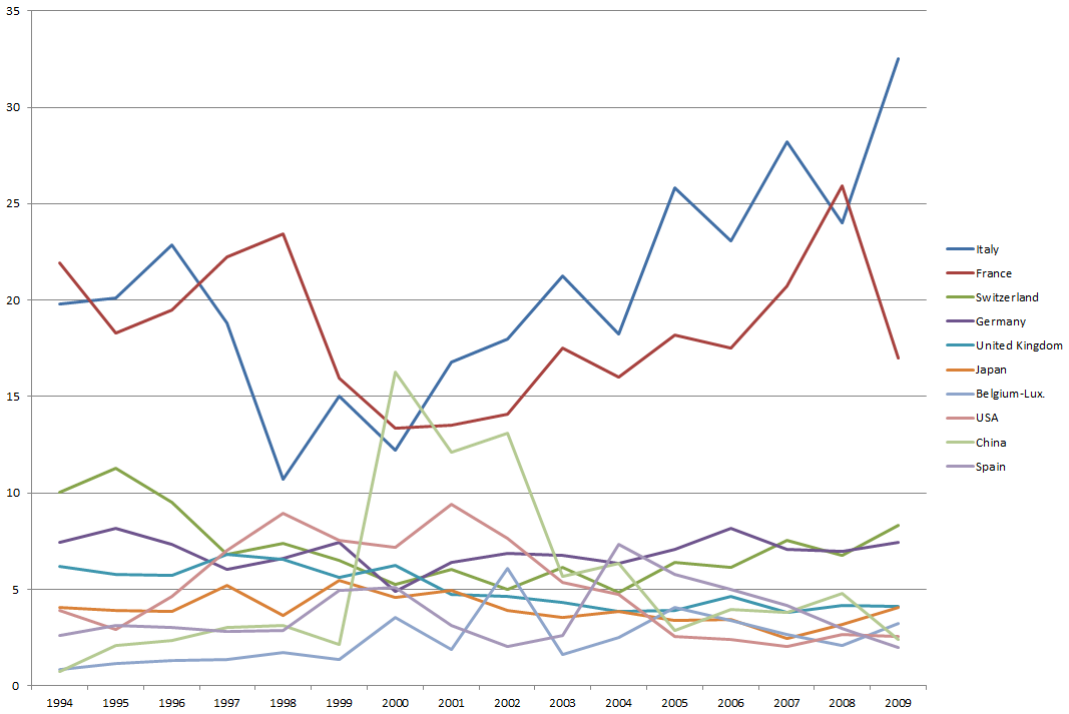
Note: All exporters having a market share of at most 3% in 2009 or in 1994. The last column is the percentage share of world market. The first three columns are percentage point changes in world market shares. Countries are ranked by decreasing value of their world exports of high-end products in 2009. Source: BACI-CEPII, authors calculation.

Figure 5: Market shares for high-end products (1994-2009, percent)



Source: BACI, authors calculation.

Figure 6: Market shares for high-end products, excluding textile (1994-2009, percent)



Source: BACI, authors calculation.

Figure 7: Total high-end exports (value) and mean GDP per Capita, by exporting country (1994-2009)

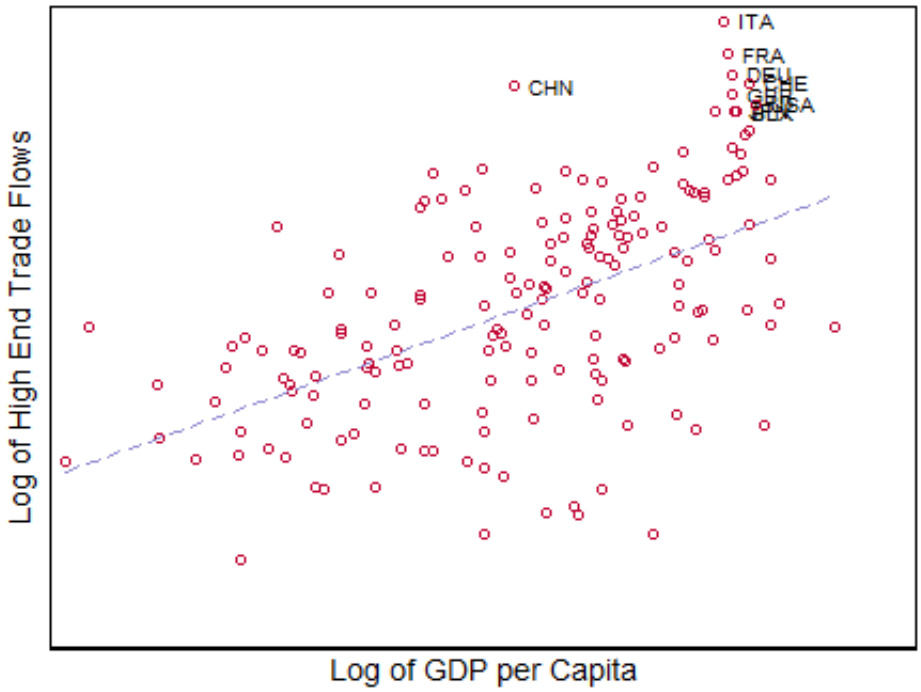


Figure 8: Total high-end exports (value) and luxury brands, by exporting country (1994-2009)

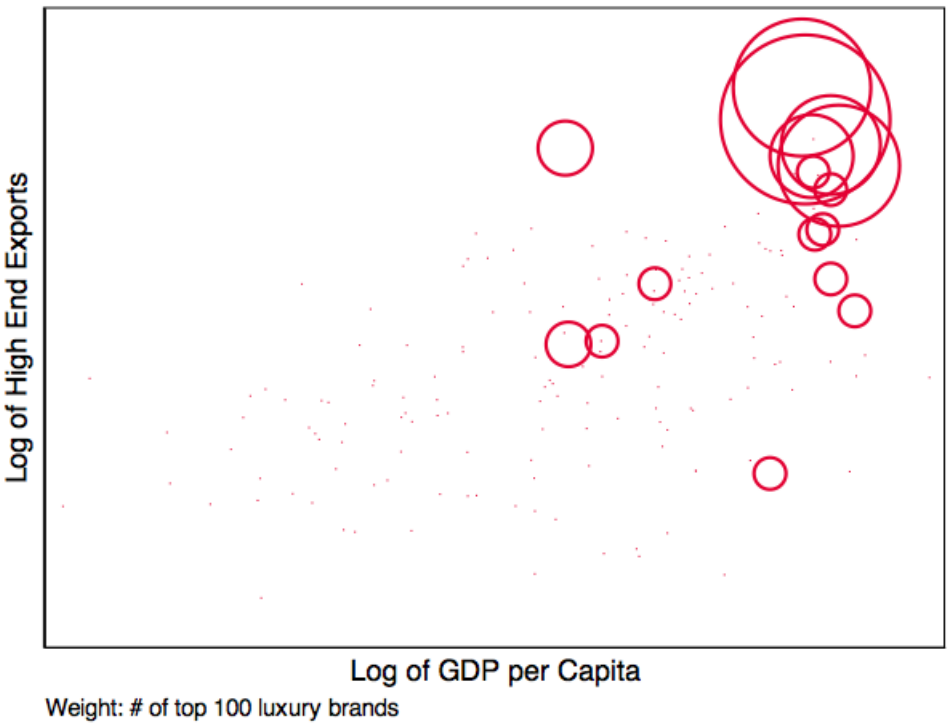


Table 2: Gravity determinants of high-end trade flows

Dependent Variable:	Log of trade flows						
Specifications	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sample:	World	World	World	France	Italy	Switzerland	China
$Distance$	-0.895***	-0.806***	-0.879***	-0.885***	-0.875***	-0.517***	-0.0212**
	(0.0141)	(0.0199)	(0.0144)	(0.00646)	(0.00545)	(0.0194)	(0.00873)
$Distance \times HighEnd$	0.131***	0.0861***	0.145***	0.307***	0.168***	0.142***	0.135***
	(0.0112)	(0.0166)	(0.0121)	(0.0109)	(0.00893)	(0.0182)	(0.0431)
GDP_i		0.626***					
		(0.0247)					
$GDP_i \times HighEnd$		-0.0322					
		(0.0253)					
$GDPCAP_i$		-0.296***					
		(0.0302)					
$GDPCAP_i \times HighEnd$		0.242***					
		(0.0315)					
GDP_j			0.461***	0.486***	0.605***	0.512***	0.747***
			(0.00519)	(0.00275)	(0.00248)	(0.0129)	(0.00344)
$GDP_j \times HighEnd$			0.00256	0.0700***	0.0736***	0.0487***	-0.132***
			(0.00643)	(0.00491)	(0.00417)	(0.0121)	(0.0105)
$GDPCAP_j$			0.382***	0.270***	0.633***	0.334***	0.488***
			(0.0109)	(0.00544)	(0.00483)	(0.0227)	(0.00604)
$GDPCAP_j \times HighEnd$			-0.0675***	0.124***	0.0375***	0.0648***	-0.186***
			(0.0106)	(0.00913)	(0.00799)	(0.0208)	(0.0154)
$HighEnd$	-1.256***	-2.463***	-0.727***	-5.241***	-3.478***	-2.756***	3.709***
	(0.0871)	(0.459)	(0.237)	(0.153)	(0.127)	(0.387)	(0.527)
Country i × Year FE	Yes	.	.	.	.	.	.
Country j × Year FE	Yes	.	.	.	.	.	.
HS6 FE	Yes	.	.	Yes	Yes	Yes	Yes
Year FE	.	.	.	Yes	Yes	Yes	Yes
Country i FE	.	.	Yes	.	.	.	.
Country i × HS6 × Year FE	.	.	Yes	.	.	.	.
Country j FE	.	Yes	.	.	.	.	.
Country j × HS6 × Year FE	.	Yes	.	.	.	.	.
Observations	9,620,162	9,620,162	9,620,162	366,028	420,081	190,534	396,827
R-squared	0.404	0.421	0.484	0.519	0.606	0.524	0.554

Note: Robust standard errors (clustered at the origin country and year level in specifications 1 to 3, and at the HS6 and year level in specifications 4 to 7) in parentheses with ***, ** and * respectively denoting significance at the 1%, 5% and 10% levels. OLS regressions for all specifications. Constant is not shown. $HighEnd$ is a dummy variable that identifies high end flows. All explanatory variables except $HighEnd$ are in logarithm.

Table 3: Determinants of the destination country-specific wealth effect on high-end trade flows

Dependent Variable:	Coefficient on $GDPCAP_j \times HighEnd\,(\hat{\gamma_7})$				$Dummy\ variable:$ $y = 1\ if\ \hat{\gamma_7} > 0$ $y = 0\ otherwise$	
Specifications	(1)	(2)	(3)	(4)	(5)	(6)
Sample:	All	All	All	All	All	Sign. $\hat{\beta}_4$
$\#\ of\ brands_i$	0.00616***			0.00629***	0.0327***	0.0320***
	(0.000898)			(0.00137)	(0.00793)	(0.00776)
$HighEnd\ Exports_i$		0.00649		-0.000722	-0.0149	-0.0122
		(0.00485)		(0.00649)	(0.0191)	(0.0241)
$GDPCAP_i$			0.0729	0.00485	-0.274	-0.152
			(0.0850)	(0.110)	(0.340)	(0.415)
Observations	175	175	175	175	175	67
R2 / Pseudo R2	0.041	0.009	0.003	0.041	0.138	0.241

Note: Robust standard errors (clustered at the origin country and year level in specifications 1 to 3, and at the HS6 and year level in specifications 4 to 7) in parentheses with ***, ** and * respectively denoting significance at the 1%, 5% and 10% levels. OLS regressions for all specifications. Constant is not shown. $HighEnd$ is a dummy variable that identifies high end flows. All explanatory variables except $HighEnd$ are in logarithm.

Appendix: Supplementary Tables

Table ST1: Determination of outliers and high-end products in BACI (1994-2009)

	(1) # of obs.	(2) % of total # of obs.	(3) Trade value	(4) % of total trade value	(5) Trade quantity	(6) % of total trade quantity
Total trade	11,980,955		6,979,103,920		1,083,620,678	
⋆ ***extreme values = drop some percentiles of the whole distribution of unit values***						
drop 1st and 99th pctle	11,741,336	98.00	6,659,700,083	95.42	1,073,730,023	99.09
high end = 10 %	1,171,109	9.97	281,730,157	4.23	2,882,867	0.27
% of total trade		9.77		4.04		0.27
drop 5th and 95th pctle	10,782,861	90.00	6,135,348,537	87.91	1,034,580,086	95.47
high end = 10 %	**1,075,071**	**9.97**	**282,853,180**	**4.61**	**3,987,900**	**0.37**
% of total trade		**8.97**		**4.04**		**0.27**
drop 1st and 10th dcle	9,584,764	80.00	5,613,256,728	80.43	992,370,249	91.58
high end = 10 %	954,974	9.96	298,237,051	5.31	5,545,479	0.56
% of total trade		7.97		4.27		0.51
⋆ ***extreme values = Hallak (2005)*** $->$ ***drop mean*5, /5***						
drop > mean*5	11,729,659	97.90	6,896,016,719	98.81	1,083,412,021	99.98
drop < mean /5	9,158,583	76.44	5,585,688,876	80.03	582,413,017	53.75
total drop	8,907,287	74.35	5,502,601,675	78.84	582,204,360	53.73
⋆ ***extreme values = Hallak (2005)*** $->$ ***drop mean*10, /10***						
drop > mean*10	11,881,441	99.17	6,927,320,355	99.17	1,083,565,979	99.99
drop < mean /10	10,254,654	85.59	6,029,206,529	86.39	668,105,524	61.65
total drop	10,155,140	84.76	5,977,422,964	85.65	668,050,825	61.65

Note: observations are cumulated over the period in column 1. Values in the third columns are also cumulated and expressed in thousands of dollar. Source: BACI-CEPII, authors calculation.

Table ST2: Change in world market share of main individual exporters of top end confectionery goods

Confectionery	p.p. var 94-00	p.p. var 00-09	p.p. var 94-09	% 2009
EU27	2,01	-14,45	-12,44	32,45
Belgium-Luxembourg	-3,58	10,16	6,59	11,77
Switzerland	-9,26	3,47	-5,80	11,17
France	0,35	5,14	5,49	8,50
Argentina	-2,19	7,69	5,50	7,92
Italy	5,01	-16,51	-11,50	6,30

Note: 5 largest exporters in 2009. Source: BACI-CEPII, authors calculation.

Table ST3: Change in world market share of main individual exporters of top end decoration goods

Decoration	p.p. var 94-00	p.p. var 00-09	p.p. var 94-09	% 2009
EU27	0,31	31,69	32,00	72,91
Italy	0,69	32,95	33,63	37,10
United Kingdom	2,47	-1,14	1,33	8,64
Germany	-5,35	4,74	-0,61	7,65
France	2,55	-5,00	-2,45	5,59
Switzerland	-6,43	-0,04	-6,46	4,24

Note: 5 largest exporters in 2009. Source: BACI-CEPII, authors calculation.

Table ST4: Change in world market share of main individual exporters of top end jewellery and watches

Jewellery & Watches	p.p. var 94-00	p.p. var 00-09	p.p. var 94-09	% 2009
EU27	-25,09	15,64	-9,45	60,10
Italy	7,84	9,27	17,11	33,76
Germany	-20,04	8,93	-11,10	16,71
Switzerland	-1,51	11,71	10,20	16,34
USA	-7,46	3,09	-4,37	5,85
Japan	-1,77	-1,90	-3,67	5,40

Note: 5 largest exporters in 2009. Source: BACI-CEPII, authors calculation.

Table ST5: Change in world market share of main individual exporters of top end fragrances

Fragrances	p.p. var 94-00	p.p. var 00-09	p.p. var 94-09	% 2009
EU27	-8,10	0,38	-7,73	55,36
France	-5,49	-0,67	-6,16	28,15
Japan	5,23	2,38	7,61	16,74
Switzerland	-14,12	8,03	-6,09	13,50
Germany	0,69	3,82	4,52	12,19
Ireland	-0,24	3,22	2,99	4,04

Note: 5 largest exporters in 2009. Source: BACI-CEPII, authors calculation.

Table ST6: Change in world market share of main individual exporters of top end shoes and bags

Shoes & Bags	p.p. var 94-00	p.p. var 00-09	p.p. var 94-09	% 2009
EU27	-20,92	28,82	7,90	79,40
Italy	-22,10	38,19	16,09	57,36
France	-5,65	-5,51	-11,16	7,06
Switzerland	-2,00	4,63	2,64	6,91
Belgium - Luxembourg	6,57	-1,28	5,29	5,44
Germany	-0,30	1,74	1,44	4,81

Note: 5 largest exporters in 2009. Source: BACI-CEPII, authors calculation.

Table ST7: Change in world market share of main individual exporters of top end products of textile

Textile	p.p. var 94-00	p.p. var 00-09	p.p. var 94-09	% 2009
EU27	-15,49	1,66	-13,84	65,44
Italy	1,46	10,89	12,35	44,33
Belgium - Luxembourg	1,38	5,80	7,18	7,64
China	7,39	-2,97	4,41	7,55
Switzerland	-1,89	3,58	1,69	6,92
Germany	-12,12	0,18	-11,94	6,40

Note: 5 largest exporters in 2009. Source: BACI-CEPII, authors calculation.

Table ST8: Change in world market share of main individual exporters of top end products of tableware

Tableware	p.p. var 94-00	p.p. var 00-09	p.p. var 94-09	% 2009
EU27	-1,46	-19,03	-20,48	35,42
China	4,96	22,38	27,34	30,27
Switzerland	-5,62	-4,09	-9,71	14,00
Japan	0,96	3,60	4,56	10,02
Czech Republic	0,36	6,55	6,91	7,68
Germany	-3,50	1,22	-2,28	6,95

Note: 5 largest exporters in 2009. Source: BACI-CEPII, authors calculation.

Table ST9: Change in world market share of main individual exporters of top end products of wine

Textile	p.p. var 94-00	p.p. var 00-09	p.p. var 94-09	% 2009
EU27	3,56	-0,88	2,68	90,38
France	-45,54	52,53	6,99	85,69
Malaysia	0,25	3,58	3,83	4,36
United kingdom	4,09	-4,12	-0,03	2,42
Switzerland	1,74	-1,24	0,50	2,22
Argentina	0,16	0,62	0,78	0,87

Note: 5 largest exporters in 2009. Source: BACI-CEPII, authors calculation.

Figure 9: Classification of high-end products (HS-6 digits)

Sector	sitc3	hs6					
Confectionery	06	170490					
	07	180620	180631	180632	180690		
Home decoration	65	570110	570252	580430	630231	630292	630419
		570190	570259	580500	630232	630293	630491
		570210	570291	630120	630239	630299	630492
		570231	570292	630130	630240	630311	630493
		570232	570299	630140	630251	630312	630499
		570239	570310	630190	630252	630319	630790
		570241	570320	630210	630253	630391	630800
		570242	570390	630221	630259	630392	
		570249	570490	630222	630260	630399	
		570251	570500	630229	630291	630411	
	82	940140	940169	940180	940360		
		940150	940171	940340	940370		
		940161	940179	940350	940380		
	8921	490110	490199	490591			
		490191	490300	490599			
	8928	491000					
	8993	961320	961330	961380			
Jewellery	8842	900311	900319	900410	900490		
	8853	910111	910119	910129	910199		
		910112	910121	910191			
	8854	910211	910219	910229	910299		
		910212	910221	910291			
	8859	911390					
	8952	960810	960820	960839	960840	960891	960910
	8973	711311	711320	711419	711610		
		711319	711411	711420	711620		
	8974	711590					
	96	711810					
Fragances	55	330300	330430	330510	330730	340119	
		330410	330491	330710	330790	340120	
		330420	330499	330720	340111		
Hand bags and shoes	61	420100	420500				
	83	420211	420221	420232	420292		
		420212	420222	420239	420299		
		420219	420231	420291	960500		
	85	640320	640351	640391	640411	640420	640520
		640330	640359	640399	640419	640510	640590
Textile	84	420310	610439	610910	620219	620459	621112
		420329	610441	610990	620291	620461	621120
		420330	610442	611010	620292	620462	621131
		420340	610443	611020	620293	620463	621132
		430310	610444	611030	620299	620469	621133
		430390	610449	611090	620311	620510	621139
		610110	610451	611110	620312	620520	621141
		610120	610452	611120	620319	620530	621142
		610130	610453	611130	620321	620590	621143
		610190	610459	611190	620322	620610	621149
		610210	610461	611231	620323	620620	621210
		610220	610462	611239	620329	620630	621220
		610230	610463	611241	620331	620640	621230
		610290	610469	611249	620332	620690	621290
		610311	610510	611300	620333	620711	621310
		610312	610520	611511	620339	620719	621320
		610319	610590	611512	620341	620721	621410
		610321	610610	611519	620342	620722	621420
		610322	610620	611520	620343	620729	621430
		610323	610690	611591	620349	620791	621440
		610329	610711	611592	620411	620792	621490
		610331	610712	611593	620412	620799	621510
		610332	610719	611599	620413	620811	621590
		610333	610721	611691	620419	620819	621600
		610339	610722	611692	620421	620821	621710
		610341	610729	611699	620422	620822	621790
		610342	610791	611720	620423	620829	650300
		610343	610792	611780	620429	620891	650400
		610349	610799	611790	620431	620892	650510
		610411	610811	620111	620432	620899	650590
		610412	610819	620112	620433	620910	650692
		610413	610821	620113	620439	620920	650699
		610419	610822	620119	620441	620930	
		610421	610829	620191	620442	620990	
		610422	610831	620192	620443	621010	
		610423	610832	620193	620444	621020	
		610429	610839	620199	620449	621030	
		610431	610891	620211	620451	621040	
		610432	610892	620212	620452	621050	
		610433	610899	620213	620453	621111	
Tableware	66	691110	691310	691490	701331	701391	
		691190	691390	701321	701332	701399	
		691200	691410	701329	701339		
	69	821110	821193	821510	821599		
		821191	821410	821591			
beverages	11	220410	220421	220429	220820		